



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,473	02/05/2004	George Bokisa	TASKP103US	4978
23623	7590	02/22/2006	EXAMINER	
AMIN & TUROCY, LLP 1900 EAST 9TH STREET, NATIONAL CITY CENTER 24TH FLOOR, CLEVELAND, OH 44114			WONG, EDNA	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/772,473

Applicant(s)

BOKISA ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☐ This action is FINAL.. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-13, 15, 23 and 24 is/are allowed.
- 6) ☒ Claim(s) 16-22 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

This is in response to the Amendment dated February 8, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The ***finality*** of the rejection of the last Office action has been withdrawn in view of the new grounds of rejection.

Response to Arguments

Claim Objections

Claim **15** has been objected to because of minor informalities.

The objection of claim 15 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claim **6** has been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claim 6 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **1-8 and 23** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848** ('848) in combination with **Passal** (US Patent No.

3,697,391).

The rejection of claims 1-8 and 23 under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with Passal has been withdrawn in view of Applicants' remarks.

II. Claims **9-12 and 24** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848** ('848) in combination with **Passal** (US Patent No. 3,697,391).

The rejection of claims 9-12 and 24 under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with Passal has been withdrawn in view of Applicants' remarks.

III. Claim **13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848** ('848) in combination with **Passal** (US Patent No. 3,697,391) as applied to claims 9-12 and 24 above, and further in view of **SU 1,544,847** ('847).

The rejection of claim 13 under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with Passal as applied to claims 9-12 and 24 above, and further in view of SU 1,544,847 ('847) has been withdrawn in view of Applicants' remarks.

IV. Claim **15** is rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-**

239848 ('848) in combination with **Passal** (US Patent No. 3,697,391) as applied to claims 9-12 and 24 above, and further in view of **JP 10-245693** ('693).

The rejection of claim 15 under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with Passal as applied to claims 9-12 and 24 above, and further in view of JP 10-245693 ('693) has been withdrawn in view of Applicants' remarks.

V. Claims **16-22 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848** ('848) in combination with **Passal** (US Patent No. 3,697,391).

The rejection of claims 16-22 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63-239848 ('848) in combination with Passal has been withdrawn in view of Applicants' remarks.

Response to Amendment

Claim Rejections - 35 USC § 103

Claims **16-22 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 63-239848** ('848) in combination with **JP 10-245693** ('693).

JP '848 teaches a method for plating a substrate with nickel cobalt boron alloy comprising:

(a) providing an electroplating bath comprising:

(i) an anode (from electroplating);

(ii) a cathode substrate (= a copper lead frame);

(iii) water (= an aqueous solution);

(iv) ionic nickel (= Ni^{2+});

(v) ionic cobalt (= Co^{2+}); and

(vi) an amine-borane compound (= $\text{Me}_3\text{N}\cdot\text{BH}_3$); and

(b) applying a current (= 1 A/dm^2) [page 4, Examples 1-2] to the electroplating bath whereby the alloy comprising nickel, cobalt, and boron forms on the cathode (= a surface electroplated with a 0.3-10 μm Ni-Co-B alloy layer) [abstract].

The electroplating bath further comprises at least one conductivity salt (= H_3BO_3) [page 4, Examples 1-2].

The conductivity salt is selected from the group consisting of boric acid, sodium sulfate, sodium chloride, potassium sulfate, and potassium chloride (= H_3BO_3) [page 4, Examples 1-2].

The method of JP '848 differs from the instant invention because JP '848 does not disclose the following:

a. Wherein the amine-borane compound is selected from the group consisting of dimethylamine borane, t-butylamine borane, triethylamine borane and hydrates thereof, as recited in claim 16.

JP '848 teaches trimethylamine borane (= $\text{Me}_3\text{N}\cdot\text{BH}_3$) [abstract].

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to have modified the trimethylamine borane described by JP '848 with wherein the amine-borane compound is selected from the group consisting of dimethylamine borane, t-butylamine borane, triethylamine borane and hydrates thereof because trimethylamine borane is structurally similar to dimethylamine borane.

Structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

b. At least two brighteners selected from the group consisting of sulfur containing brighteners and acetylenic brighteners, as recited in claim 16.

c. Wherein the sulfur containing brightener is selected from the group consisting of sulfinic acid, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonamides, sulfimides, and sulfo-betaines, as recited in claim 17.

Like JP '848, JP '693 teaches electroplating electronic parts with a nickel cobalt boron alloy (abstract). JP '693 teaches that to prevent corrosion of the electronic parts and to prevent precipitation of metals on an insulating part even when the current density is increased, a heterocyclic quaternary ammonium compound is incorporated as a brightener into the alloy electroplating bath (abstract). The heterocyclic quaternary ammonium compound is one or more sulfur containing brighteners of an aromatic

sulfonate (abstract; page 1, [0007]; and page 1, claim 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electroplating bath described by JP '848 with at least two brighteners selected from the group consisting of sulfur containing brighteners and acetylenic brighteners; and wherein the sulfur containing brightener is selected from the group consisting of sulfinic acid, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonamides, sulfimides, and sulfo-betaines because this would have prevented corrosion of the electronic parts and prevented precipitation of metals on an insulating part even when the current density is increased as taught by JP '693 (abstract).

d. Wherein the electroplating bath has a pH from about 3.5 to about 4.5 and a temperature from about 40°C to about 70°C, and a current density of about 20 ASF or more and about 100 ASF or less is applied to the electroplating bath, as recited in claim 19.

JP '848 teaches a pH (page 4, left column, lines 5-14), a temperature (= 30°C) and a current density (= 1 A/dm²) [page 4, Examples 1-2].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method described by JP '848 with wherein the electroplating bath has a pH from about 3.5 to about 4.5 and a temperature from about 40°C to about 70°C, and a current density of about 20 ASF or more and about 100 ASF

or less is applied to the electroplating bath because changes in the pH, temperature and current density are not deemed patentable modifications; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

Furthermore, the pH, temperature and current density are result-effective variables and one skilled in the art has the skill to calculate the pH, temperature and current density that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(II)(B).

Furthermore, JP '693 teaches a pH ranging from 3-10 (abstract), a temperature ranging from 30°C-60°C (page 3, Table), and a current density ranging from 0.1-2 A/dm² (page 4, Table).

e. Wherein the electroplating bath comprises from about 0.01% to about 1% by weight of the at least two brighteners, as recited in claim 20.

JP '693 teaches 0.01-5 g/l of the brightener (page 2, [0015]).

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

Claims **1-8 and 23** define over the prior art of record because the prior art does not teach or suggest a method of electroplating an alloy comprising nickel, cobalt, and boron comprising the steps of providing and applying as presently claimed, esp., wherein the electroplating bath comprises an amine-borane compound and at least one acetylenic brightener.

Claims **9-13, 15 and 24** define over the prior art of record because the prior art does not teach or suggest a method of plating a substrate with a nickel, cobalt, and boron alloy comprising the steps of providing and applying as presently claimed, esp., wherein the electroplating bath comprises an amine-borane compound and at least one acetylenic brightener.

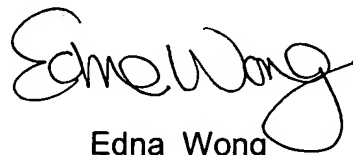
The prior art does not contain any language that teaches or suggests the above. *JP 63-239848* and *JP 10-245693* do not teach an acetylenic brightener. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Edna Wong
Primary Examiner
Art Unit 1753

EW
February 17, 2006